

CLAIMS

- 1 1. A method for allowing a router to efficiently determine a capability and configuration
2 of a peer router in a computer network, the method comprising the steps of:
3 automatically determining which capability mode of operation the peer router
4 supports by sending an initial message from the router to the peer router, the initial mes-
5 sage including a first predetermined value of the capability;
6 if the router receives a positive acknowledgement of the initial message from the
7 peer router, determining that the peer router supports exchanges of messages using a new
8 capability mode of operation;
9 if the router receives a negative acknowledgement of the initial message from the
10 peer router, deciding that the peer router does not support the new capability mode of op-
11 eration; and
12 switching to an old capability mode of operation by resending the initial message
13 with a second predetermined value of the capability.
- 1 2. The method of Claim 1 wherein the step of deciding comprises the step of, if the
2 router does not receive a response at all within a predetermined time, deciding that the
3 peer router does not support the new capability mode of operation.
- 1 3. The method of Claim 1 wherein the initial message is Border Gateway Protocol (BGP)
2 routing protocol message and wherein the capability is a time-to-live (TTL) parameter.
- 1 4. The method of Claim 3 wherein the new capability mode of operation is defined by
2 BGP TTL Security Hack (BTSH).
- 1 5. The method of Claim 4 wherein the first predetermined value of the TTL parameter
2 capability is 255.

1 6. The method of Claim 3 wherein the second predetermined value of the TTL parameter
2 is 1.

1 7. The method of Claim 1 further comprising the steps of, in response to the router re-
2 ceiving a negative acknowledgement of the initial message from the peer router:
3 upgrading the peer router to the new capability mode of operation;
4 rebooting the peer router, thereby destroying an existing session between the
5 routers;
6 establishing a new session by sending messages with the first predetermined value
7 of the capability; and
8 communicating between the routers using messages with the first predetermined
9 value of the capability.

1 8. A system adapted to allow a router to efficiently determine a capability and configu-
2 ration of a peer router in a computer network, the system comprising:
3 a routing protocol process executing in the peer router and adapted to receive an
4 initial routing protocol message sent by an initiating routing protocol process executing
5 in the router, the initial routing protocol message including a predetermined value of
6 the capability, the routing protocol process returning one of (i) a positive acknowle-
7 dgement of the initial routing protocol message to the router if the peer router supports ex-
8 changes of messages using a new capability mode of operation and (ii) a negative ac-
9 knowledgement of the initial routing protocol message if the peer router does not support
10 the new capability mode of operation.

1 9. The system of Claim 8 wherein the routing protocol process executing in the peer
2 router is the Border Gateway Protocol version 4 (BGP) routing protocol and wherein the
3 capability is a time-to-live (TTL) parameter.

1 10. The system of Claim 9 wherein the new capability mode of operation is defined by
2 BGP TTL Security Hack (BTSH).

1 11. The system of Claim 10 wherein the predetermined value of the TTL parameter ca-
2 pability is 255.

1 12. Apparatus adapted to allow a router to efficiently determine a capability and configu-
2 ration of a peer router in a computer network, the apparatus comprising:

3 means for sending an initial message from the router to the peer router, the initial
4 message including a first predetermined value of the capability;

5 if the router receives a positive acknowledgement of the initial message from the
6 peer router, means for determining that the peer router supports exchanges of messages
7 using a new capability mode of operation;

8 if the router receives a negative acknowledgement of the initial message from the
9 peer router, means for deciding that the peer router does not support the new capability
10 mode of operation; and

11 means for switching to an old capability mode of operation by resending the ini-
12 tial message with a second predetermined value of the capability.

1 13. The apparatus of Claim 12 wherein the means for deciding comprises, if the router
2 does not receive a response at all within a predetermined time, means for deciding that
3 the peer router does not support the new capability mode of operation.

1 14. The apparatus of Claim 12 wherein the initial message is Border Gateway Protocol
2 (BGP) routing protocol message, the capability is a time-to-live (TTL) parameter and the
3 new capability mode of operation is defined by BGP TTL Security Hack (BTSH).

1 15. The apparatus of Claim 12 further comprising, in response to the router receiving a
2 negative acknowledgement of the initial message from the peer router:

3 means for upgrading the peer router to the new capability mode of operation;
4 means for destroying an existing session between the routers;
5 means for sending messages with the first predetermined value of the capability;
6 and
7 means for communicating between the routers using messages with the first pre-
8 determined value of the capability.

1 16. A computer readable medium containing executable program instructions for allow-
2 ing a router to efficiently determine a capability and configuration of a peer router in a
3 computer network, the executable program instructions comprising program instructions
4 for:

5 automatically determining which capability mode of operation the peer router
6 supports by sending an initial message from the router to the peer router, the initial mes-
7 sage including a first predetermined value of the capability;

8 if the router receives a positive acknowledgement of the initial message from the
9 peer router, determining that the peer router supports exchanges of messages using a new
10 capability mode of operation;

11 if the router receives a negative acknowledgement of the initial message from the
12 peer router, deciding that the peer router does not support the new capability mode of op-
13 eration; and

14 switching to an old capability mode of operation by resending the initial message
15 with a second predetermined value of the capability.

1 17. The computer readable medium of Claim 16 wherein the program instruction for de-
2 ciding comprises one or more program instructions for, if the router does not receive a
3 response at all within a predetermined time, deciding that the peer router does not support
4 the new capability mode of operation.

- 1 18. The computer readable medium of Claim 16 wherein the initial message is Border
2 Gateway Protocol (BGP) routing protocol message and wherein the capability is a time-
3 to-live (TTL) parameter.
- 1 19. The computer readable medium of Claim 18 wherein the new capability mode of op-
2 eration is defined by BGP TTL Security Hack (BTSH).
- 1 20. The computer readable medium of Claim 16 further comprising program instructions
2 for, in response to the router receiving a negative acknowledgement of the initial message
3 from the peer router:
4 upgrading the peer router to the new capability mode of operation;
5 destroying an existing session between the routers;
6 sending messages with the first predetermined value of the capability; and
7 communicating between the routers using messages with the first predetermined
8 value of the capability.
- 1 21. A system adapted to allow a router to efficiently determine a capability and configu-
2 ration of a peer router in a computer network, the system comprising:
3 an initiating routing protocol process executing in the router and adapted to send
4 an initial routing protocol message to a routing protocol process executing in the peer
5 router, the initial routing protocol message including a predetermined value of the ca-
6 pability, the initiating routing protocol process receiving one of (i) a positive acknow-
7 ledgement of the initial routing protocol message if the peer router supports exchanges of
8 messages using a new capability mode of operation and (ii) a negative acknowledgement
9 of the initial routing protocol message if the peer router does not support the new capa-
10 bility mode of operation.

1 22. The system of Claim 21 wherein the initiating routing protocol process executing in
2 the router is the Border Gateway Protocol version 4 (BGP) routing protocol and wherein
3 the capability is a time-to-live (TTL) parameter.

1 23. The system of Claim 22 wherein the new capability mode of operation is defined by
2 BGP TTL Security Hack (BTSH).

1 24. The system of Claim 23 wherein the predetermined value of the TTL parameter ca-
2 pability is 255.